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27335.00 March 13, 2008

Kenneth N. Schenck, Jr.
Town Manager
Town of Ocean Ridge
6450 North Ocean Ridge Boulevard
Ocean Ridge, FL 33435

RE: ***Review of City of Boynton Beach South Lake Worth Supplemental Report***

Dear Mr. Schenck:

I understand that a supplemental storm surge study has been completed as an addendum to the original November 7, 2007 report on South Lake Worth Inlet prepared by Applied Technology & Management (ATM) under contract to the City of Boynton Beach. In the addendum, ATM (January, 2008) reports the results of additional numerical modeling to estimate the impact that various alternative modifications to the inlet might have on storm surge elevations in Lake Worth. As you requested, this letter summarizes my review and impressions from the addendum.

In my discussion of the original report, I noted that I "theoretically" agreed with ATM's statements about the potential for increased storm surge entering the lagoon. However, complex effects such as *portions* of storms, speed of forward movement, angle of approach and overall storm size all would affect the severity of the surge at a particular location and may be of greater significance than just the size of the inlet opening – and, in fact, just one of three inlets in the region. Again, the writers of the ATM addendum report seem to repeat their acknowledgement of such complexity, but then make a series of approximations which allow them to formulate the storm surge *elevation* estimates using the 'existing' two-dimensional model used for the original alternatives evaluation.

In addition, as you correctly noted in your transmittal letter to me, the conclusions presented treat only the potential changes to the *actual water level* resulting from possible inlet project modifications, and not the flooding *effects* of those water level changes. The distinction is important because even the simplified model results show that there is a limit to the horizontal area over which the possible higher (or lower) water levels would extend.

In our conversation following my review of the original report we had also discussed the idea that for some situations of high rainfall and discharge of stormwater from the west into the lagoon, an increase in the opening size at South Lake Worth inlet might allow faster draining and actually decrease 'net' flooding even for slightly higher initial peak storm surge levels. This same point was confirmed in the supplemental study for a scenario where a storm made landfall further north, closer to Lake Worth Inlet (e.g., page 3). The model actually predicted a lower peak water level in the lagoon behind South Lake Worth Inlet because of a hypothetical increase in the inlet opening than was predicted for the existing inlet conditions. The predictions do suggest a higher peak water level after inlet modification at South Lake Worth Inlet for scenarios

where storms might make landfall closer to South Lake Worth. Again, this difference between predictions of more surge or less surge reinforce the complexity of the situation and the significance of which assumptions one makes.

The supplemental report does not seem to advance the understanding of actual net flooding effects resulting from higher (or lower) peak water levels and, because of the variability of outcomes depending on differing input assumptions, the results do not seem to better inform decision-making among options for modification to South Lake Worth Inlet.

Thank you for again contacting me about this review for the Town. Please let me know if you have any questions about the review and/or comments.

Sincerely,
COASTAL TECH

Cliff Truitt, PE, PhD
Director of Engineering